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10/590,144	08/21/2006	Takanori Fukuyama	2006_1088A	7137
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EXAMINER				
ELBIN, JESSE A				
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/590,144

Applicant(s)

FUKUYAMA ET AL.

Examiner

JESSE A. ELBIN

Art Unit

2614

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 September 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) 18 and 19 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-17 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 21 August 2006 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SF-08)
- Paper No(s)/Mail Date 21 August 2006
- 4) ☐ Interview Summary (PTO-413)
- Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Election/Restrictions

1. Applicant's election without traverse of invention I (claims 1-17) in the reply filed on 16 September 2008 is acknowledged.
2. Claims 18-19 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on 16 September 2008.

Drawings

3. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the "tangential rib" of claim 14 must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for

consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1-2, 8 and 15-17 are rejected under 35 U.S.C. 102(b) as being anticipated by House (US Patent 5,883,967 ('967)).

Regarding claim 1, House teaches a speaker (loudspeaker; '967 title) including: a magnet circuit assembly (*comprising at least* Fig. 1 #32, 34, and 35) including: a frame (Fig. 1 #26); and a permanent magnet (Fig. 1 #35); a diaphragm assembly including: a diaphragm (#12 (*Fig. 1 does not illustrate #12, rather analogous reference characters for the diaphragm include: Fig. 3 #112, Fig. 4 #212, Fig. 5 #312, etc.*))); and a voice coil (Fig. 1 #18) attached to an outer periphery of the diaphragm (Fig. 1); and an edge (outer surround; Fig. 1 #30) that is attached to the frame along an outer periphery

thereof (Fig. 1) and joined onto the diaphragm in a position more peripherally inward than the voice coil along an inner periphery thereof to partly overlap the diaphragm (Fig. 1), and that supports the diaphragm assembly with respect to the frame ("Diaphragm 12 is supported from a combination frame and loudspeaker voice coil motor stator 26 by an outer surround or compliance 30"; '967 col. 3 lines 26-28); wherein the diaphragm and the edge have a crossover portion in which the diaphragm and the edge overlap with each other, other than a joint thereof (Fig. 1 *illustrates edge 30 joining with the diaphragm and overlapping the diaphragm to create the surface 56 of the diaphragm*).

Regarding claim 2, House remains as applied above.

House further teaches a through-hole (*provided between ribs* Fig. 2 #43) is provided in a portion of the diaphragm overlapped by the edge (Fig. 1 *illustrates ribs 43 creating 'through-holes' in the area covered by the edge 30*).

Regarding claim 8, House remains as applied above.

House further teaches the diaphragm being structured of a sheet material (Fig. 1 *illustrates a flat (i.e. sheet) diaphragm*).

Regarding claim 15, House remains as applied above.

House further teaches a module including the speaker of claim 1 (*see rejection of claim 1 above*); and an electronic circuit ("Current through the voice coil reciprocates the voice coil"; '967 col. 1 lines 19-20; *wherein a circuit is inherently required to provide current to the voice coil*) coupled to the speaker.

Regarding claim 16, House remains as applied above.

House further teaches electronic equipment (automobile; '967 col. 3 line 41) having the speaker of claim 1 incorporated therein (*see rejection of claim 1 above*).

Regarding claim 17, House remains as applied above.

See rejection of claim 16 above where House teaches the speaker incorporated into an automobile.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

8. Claims 3-4 are rejected under 35 U.S.C. 103(a) as being unpatentable over House (US Patent 5,883,967 ('967)) as applied to claim 1 above, and further in view of Stiles (US PGPub 2004/0228500 ('500)).

Regarding claim 3, House remains as applied above.

House does not explicitly teach a guide being provided on the diaphragm in the joint of the diaphragm and the edge.

In the same field of endeavor, Stiles teaches a guide (*the step portion illustrated in '500 Fig. 1A at #46*) being provided on the diaphragm in the joint of the diaphragm and the edge ('500 Fig. 1A) for the benefit of providing a large mounting area with a repeatable manufacturing guide.

It would have been obvious to modify the connection between the surround and diaphragm taught by House with the recessed connection taught by Stiles for the benefit of providing a large mounting area with a repeatable manufacturing guide.

Regarding claim 4, the combination of House and Stiles remains as applied above.

Stiles further teaches the guide being a recess for receiving the joint of the edge ('500 Fig. 1A).

9. Claims 3 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over House (US Patent 5,883,967 ('967)) as applied to claim 1 above, and further in view of D'Hoogh (US PGPub 2003/0031337 ('337)).

Regarding claim 3, House remains as applied above.

House does not explicitly teach a guide being provided on the diaphragm in the joint of the diaphragm and the edge.

In the same field of endeavor, D'Hoogh teaches a guide (*the step portion illustrated in '337 Fig. 1 at the connection of #18 and #8a*) being provided on the diaphragm in the joint of the diaphragm and the edge ('337 Fig. 1) for the benefit of providing a large mounting area with a repeatable manufacturing guide.

It would have been obvious to modify the connection between the surround and diaphragm taught by House with the recessed connection taught by D'Hoogh for the benefit of providing a large mounting area with a repeatable manufacturing guide.

Regarding claim 5, the combination of House and D'Hoogh remains as applied above.

D'Hoogh further teaches the guide is a horizontal recess for receiving the joint of the edge (Fig. 1).

10. Claims 3 and 6-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over House (US Patent 5,883,967 ('967)) as applied to claim 1 above, and further in view of Hiroswawa et al. (US Patent 5,521,886 ('886)).

Regarding claim 3, House remains as applied above.

House does not explicitly teach a guide being provided on the diaphragm in the joint of the diaphragm and the edge.

In the same field of endeavor, Hiroswawa teaches a guide (joint portion; '886 Fig. 6 #4) being provided on the diaphragm ("the diaphragm portion 1 has its portion corresponding to the concave and convex surfaces of the....mold"; '886 col. 6 lines 42-43) in the joint of the diaphragm and the edge (Fig. 6) for the benefit of providing a secure mounting area with a repeatable manufacturing guide.

It would have been obvious to modify the connection between the surround and diaphragm taught by House with the recessed connection taught by Hiroswawa for the benefit of providing a large mounting area with a repeatable manufacturing guide.

Regarding claim 6, the combination of House and Hiroswawa remains as applied above.

The combination of Hiroswawa and House does not explicitly teach the guide being a U-shaped groove for receiving the joint of the edge.

Hiroswawa does teach molding "concave and convex" portions into the diaphragm ('886 col. 6 lines 42-43) and the edge portion ('886 col. 6 lines 46-47) such that the

resulting joint portion provides an increased mechanical strength to the bond ('886 col. 6 lines 50-52. Providing a specific U-shape to the "concave and convex" portions will not alter the functionality of the joint portion. Further it is attainable by one of ordinary skill in the art based on the requirements of the design.

It would have been obvious to one of ordinary skill in the art at the time of the invention to provide a U-shaped groove taught by Hirosawa in the joint between the diaphragm and the edge portion taught by House for the benefit of increasing the strength of the bond between the two portions.

Regarding claim 7, the combination of House and Hirosawa remains as applied above.

The combination of Hirosawa and House does not explicitly teach the guide being a V-shaped groove for receiving the joint of the edge.

Hirosawa does teach molding "concave and convex" portions into the diaphragm ('886 col. 6 lines 42-43) and the edge portion ('886 col. 6 lines 46-47) such that the resulting joint portion provides an increased mechanical strength to the bond ('886 col. 6 lines 50-52. Providing a specific V-shape to the "concave and convex" portions will not alter the functionality of the joint portion. Further it is attainable by one of ordinary skill in the art based on the requirements of the design.

It would have been obvious to one of ordinary skill in the art at the time of the invention to provide a V-shaped groove taught by Hirosawa in the joint between the

diaphragm and the edge portion taught by House for the benefit of increasing the strength of the bond between the two portions.

11. Claims 9-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over House (US Patent 5,883,967 ('967)) as applied to claim 1 above.

Regarding claim 9, House remains as applied above.

House does not explicitly teach the edge being structured of a sheet material.

Examiner takes official notice that constructing the edge out of a sheet material is well known in the art. Conventional speakers use a wide variety of materials, shapes, thicknesses, and manufacturing techniques to create a combination of diaphragm and edge portion that matches the requirements of the design. Different materials, thicknesses, and shapes of the edge and diaphragm can yield different diaphragm stiffness, weight, and edge damping ability. Therefore constructing the edge out of sheet material is well within the skill of one of ordinary skill in the art, with a minimal amount of experimentation, based on the requirements of the design.

It would have been obvious to one of ordinary skill in the art at the time of the invention to manufacture the edge taught by House out of sheet material, based on the requirements of the design.

Regarding claim 10, House remains as applied above.

House does not explicitly teach the edge being structured of a material different from that of the diaphragm.

Examiner takes official notice that structuring the edge and diaphragm materials to be different is well known in the art. Conventional speakers use a wide variety of materials, shapes, thicknesses, and manufacturing techniques to create a combination of diaphragm and edge portion that matches the requirements of the design. Different materials, thicknesses, and shapes of the edge and diaphragm can yield different diaphragm stiffness, weight, and edge damping ability. Further, the requirements of the design rarely produce a diaphragm and edge produced from the same material. Therefore structuring the edge and diaphragm materials to be different is well within the skill of one of ordinary skill in the art, with a minimal amount of experimentation, based on the requirements of the design.

It would have been obvious to one of ordinary skill in the art at the time of the invention to manufacture the edge and diaphragm taught by House out of different materials, based on the requirements of the design.

Regarding claim 11, House remains as applied above.

House does not explicitly teach the edge being structured of a material thinner than that of the diaphragm.

Examiner takes official notice that structuring the edge material to be thinner than that of the diaphragm is well known in the art. Conventional speakers use a wide variety of materials, shapes, thicknesses, and manufacturing techniques to create a

combination of diaphragm and edge portion that matches the requirements of the design. Different materials, thicknesses, and shapes of the edge and diaphragm can yield different diaphragm stiffness, weight, and edge damping ability. Therefore structuring the edge material to be thinner than that of the diaphragm is well within the skill of one of ordinary skill in the art, with a minimal amount of experimentation, based on the requirements of the design.

It would have been obvious to one of ordinary skill in the art at the time of the invention to manufacture the edge and diaphragm taught by House out of materials with different thicknesses, based on the requirements of the design.

Regarding claim 12, House remains as applied above.

House does not explicitly teach the edge being structured of a material softer than that of the diaphragm.

Examiner takes official notice that structuring the edge material to be softer than that of the diaphragm is well known in the art. Conventional speakers use a wide variety of materials, shapes, thicknesses, and manufacturing techniques to create a combination of diaphragm and edge portion that matches the requirements of the design. Different materials, thicknesses, and shapes of the edge and diaphragm can yield different diaphragm stiffness, weight, and edge damping ability. Therefore structuring the edge material to be softer than that of the diaphragm is well within the skill of one of ordinary skill in the art, with a minimal amount of experimentation, based on the requirements of the design.

It would have been obvious to one of ordinary skill in the art at the time of the invention to manufacture the edge and diaphragm taught by House out of materials with different softness, based on the requirements of the design.

Regarding claim 13, House remains as applied above.

House does not explicitly teach the edge being structured of a material having larger internal loss than that of the diaphragm.

Examiner takes official notice that structuring the edge material to have a larger internal loss than that of the diaphragm is well known in the art. Conventional speakers use a wide variety of materials, shapes, thicknesses, and manufacturing techniques to create a combination of diaphragm and edge portion that matches the requirements of the design. Different materials, thicknesses, and shapes of the edge and diaphragm can yield different diaphragm stiffness, weight, and edge damping ability. Therefore structuring the edge material to have a larger internal loss than that of the diaphragm is well within the skill of one of ordinary skill in the art, with a minimal amount of experimentation, based on the requirements of the design.

It would have been obvious to one of ordinary skill in the art at the time of the invention to manufacture the edge and diaphragm taught by House out of materials with different internal losses, based on the requirements of the design.

12. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over House (US Patent 5,883,967 ('967)) as applied to claim 1 above, and further in view of Frasl (US PGPub 2003/0112995 ('995)).

Regarding claim 14, House remains as applied above.

House does not explicitly teach including a tangential rib on the edge.

In the same field of endeavor, Frasl teaches an edge with a tangential rib (pleats; Fig. 2 #22) for the benefit of altering the damping characteristics of the edge.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the edge taught by House with the pleats taught by Frasl for the benefit of altering the damping characteristics of the edge.

Conclusion

13. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- a. Shteyn (US Patent 6,031,925) teaches a telescoping loudspeaker with multiple voice coils.
- b. Matsuda et al. (US Patent 4,122,314) teaches a loudspeaker having a laminate diaphragm.
- c. Inanaga et al. (US Patent 5,062,140) teaches an induction speaker.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JESSE A. ELBIN whose telephone number is (571)270-3710. The examiner can normally be reached on Monday through Friday, 9:00am to 6:00pm EDT.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Curtis Kuntz can be reached on (571) 272-7499. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/J. A. E./
Examiner, Art Unit 2614

/CURTIS KUNTZ/
Supervisory Patent Examiner, Art Unit 2614